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TITLE: Data processing system for computer
network - has forwarding unit that transmits data
according to predetermined information after
forwarding request is received from client terminal

PATENT-ASSIGNEE: CANON KK[CANO]

PRIORITY-DATA: 1996JP-0132055 (May 27, 1996)

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INT-CL (IPC): G06F012/00, G06F015/00

ABSTRACTED-PUB-NO: JP 09319639A

BASIC-ABSTRACT:

The system includes a client terminal (102a) and a server terminal (101). A time recognition unit which recognises a predetermined time is provided. A data recognition unit determines a predetermined information from the server terminal.

A forwarding request unit asks for the forwarding of data

according to the
recognised information when the predetermined time has
elapsed. A storing unit
holds the data forwarded from the server terminal. A
forwarding unit sends the
data based on the information upon receiving the forwarding
request from the
client terminal.

ADVANTAGE - Enables reliable, efficient, and effective data
back-up formation.

CHOSEN-DRAWING: Dwg.2/7

TITLE-TERMS: DATA PROCESS SYSTEM COMPUTER NETWORK FORWARDING
UNIT TRANSMIT DATA
 ACCORD PREDETERMINED INFORMATION AFTER FORWARDING
REQUEST RECEIVE
 CLIENT TERMINAL

DERWENT-CLASS: T01

EPI-CODES: T01-H07C5A; T01-M02A1B;

SECONDARY-ACC-NO:

Non-CPI Secondary Accession Numbers: N1998-073110

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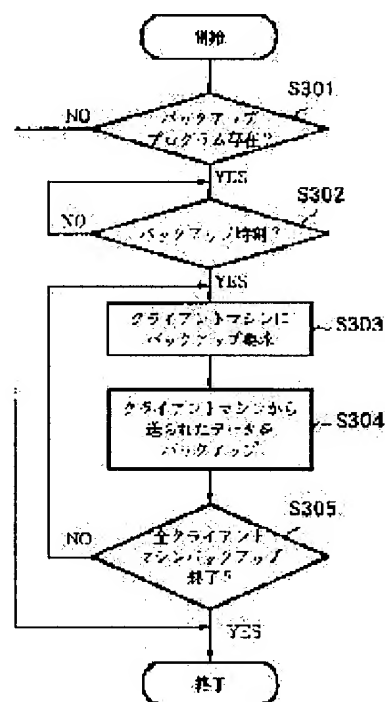
(22)Date of filing : 27.05.1996 (72)Inventor : OI KOICHI

(54) SYSTEM AND METHOD FOR PROCESSING INFORMATION

(57)Abstract:

PROBLEM TO BE SOLVED: To unnecessitate any operation for a client side user in the case of backing up a client side file in client/server configuration.

SOLUTION: When a backup program exists inside a server (S301), the end of backup date/time is confirmed by a timer inside the server (S302) and the backup request of 'send file after prescribed directory' is made to the client side (S303). Then, in response to this request, on the client side, the requested files after the directory are successively sent to the server side. On the server side, the transferred files are stored at prescribed places so as to be backed up without interposing the client side user (S304).



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CLAIMS

[Claim(s)]

[Claim 1] Are the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment. A time recognition means to recognize time, and a data recognition means to recognize the predetermined data information held at said 2nd equipment, A transfer-request means to require the data transfer based on the predetermined data information recognized by said recognition means of said 2nd equipment when expiration of predetermined time has been recognized by said time recognition means, Information processing system characterized by having a storing means to store in a predetermined location the data transmitted from said 2nd equipment, and having a transfer means to transmit the data based on said predetermined data information according to the transfer request from said 1st equipment, in said 2nd equipment.

[Claim 2] Are the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment. A time recognition means to recognize time, and a transfer-request means to require a data transfer of said 2nd equipment when expiration of predetermined time has been recognized by said time recognition means, Have a storing means to store in a predetermined location the data transmitted from said 2nd equipment, and it sets to said 2nd equipment. Information processing system characterized by having a data recognition means to recognize the predetermined data information which self holds, and a transfer means to transmit the data based on the predetermined data information recognized by said recognition means according to the transfer request from said 1st equipment.

[Claim 3] Information processing system according to claim 1 or 2 characterized by having said 1st at least one equipment.

[Claim 4] Information processing system according to claim 3 characterized by having said 2nd at least one equipment.

[Claim 5] It is the information processing system according to claim 4 which said information processing system consists of a client-server configuration, and said 1st equipment is a server machine, and is characterized by said 2nd equipment being a client machine.

[Claim 6] Said transfer means is information processing system according to claim 5 characterized by transmitting the copy data of said predetermined data.

[Claim 7] Said predetermined data information is information processing system according to claim 6 characterized by being the directory information used as the candidate for backup.

[Claim 8] Said transfer means is information processing system according to claim 7 characterized by transmitting all the files under the directory shown by said directory information.

[Claim 9] Said predetermined data information is information processing system according to claim 6 characterized by being the file information used as the candidate for backup.

[Claim 10] Furthermore, it is the information processing system according to claim 1 or 2 which said 2nd equipment has a mark addition means to add identification marking to the data to hold, and is characterized by said data recognition means recognizing predetermined data information by said identification marking.

[Claim 11] Said addition means is information processing system according to claim 10 characterized by adding identification marking per file.

[Claim 12] Said addition means is information processing system according to claim 10 characterized by adding identification marking per directory.

[Claim 13] Are the information processing approach in the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment side. The recognition process which recognizes the predetermined data information held at said 2nd equipment, The demand process which requires the data transfer based on said recognized predetermined data information of said 2nd equipment when expiration of predetermined time has been recognized, The information processing approach characterized by having the storing process which stores in a predetermined location the data transmitted from said 2nd equipment, and having the transfer process which transmits the data based on said predetermined data information according to the transfer request from said 1st equipment in said 2nd equipment side.

[Claim 14] Are the information processing approach in the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment side. When expiration of predetermined time has been recognized, have the demand process which requires a data transfer of said 2nd equipment, and the storing process which stores in a predetermined location the data transmitted from said 2nd equipment, and it sets to said 2nd equipment side. The information processing approach characterized by having the recognition process which recognizes the predetermined data information which self holds, and the transfer process which transmits the data based on said recognized predetermined data information according to the transfer request from said 1st equipment.

[Claim 15] It is the computer-readable memory in which the program code in the information processing system to which the 1st equipment and 2nd equipment were connected was stored. As said object for the 1st equipment The code of the recognition process which recognizes the predetermined data information held at said 2nd equipment, The code of the demand process which requires the data transfer based on said recognized predetermined data information of said 2nd equipment when expiration of predetermined time has been recognized, The code of the storing process which stores in a predetermined location the data transmitted from said 2nd equipment, Computer-readable memory characterized by having the code of the transfer process which **** and transmits the data based on said predetermined data information as said object for the 2nd equipment according to the transfer request from said 1st equipment.

[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to the information processing system which backs up the information memorized by the store of a client machine with a server machine, and its approach, concerning information processing system and its approach.

[0002]

[Description of the Prior Art] Conventionally, the computer system connected in the so-called network of the client-server configuration which connects at least one set (a client machine is called hereafter) of a client computer with at least one server computer (a server machine is called hereafter) exists.

[0003] In the computer system of such a client-server configuration, when the work content in a client machine etc. is accumulated in storage, such as a hard disk in a client machine, for example, according to a certain cause, failure of this storage occurs and backup is usually taken in preparation for the situation where reference of the work content becomes impossible.

[0004] Backup points out saving the copy of the work content stored in the store at the hard disk of a floppy disk, a tape, or a server machine etc. here. Usually, a backup activity is manually done by the user. That is, backup is performed by setting preservation media, such as a FLOPPY disk used as a copy place, or a tape, to a drive, and copying the file which stored the work content in a hard disk. Or this file is backed up to the integral hard disk of a server machine. In addition, although the time and effort which sets a preservation medium can be saved when backing up to the hard disk of a server machine, the activity which specifies the directory which serves as a copy place of a file in a server machine, and actually copies a file is a user's handicraft too.

[0005] Of course, it is also possible to automate such a backup activity to some extent. For example, by having a scheduling program, it is possible to operate a predetermined backup program in predetermined time by this program. In the backup program, the copy actuation of a file used as the candidate for backup is specified. It can back up automatically by this at predetermined time of day, such as 0:00 a.m. on every week Saturday, and automation of a backup activity can be attained.

[0006]

[Problem(s) to be Solved by the Invention] However, in the computer system of the above-mentioned conventional client-server configuration, in order to automate backup, each user has to create an original backup program. This is because the files which the work environments of a client machine differ for every user, therefore serve as a candidate for backup also differ, and is difficult to create the general-purpose backup program which becomes usable among different users. Therefore, in order to automate backup, the skill which creates a backup program is required of the user individual of a client machine.

[0007] Moreover, the candidate for backup -- the number of files which should back up increases along with change of a work content -- changes every moment. Therefore, as for each backup program, a maintenance is always needed. This maintenance is very complicated, and when this maintenance occurs frequently, time and effort to the extent that it is not different from manual backup will produce it.

[0008] Even if it makes it handicraft like the above and makes it automation by the backup program,

since it is not avoided, it will become a burden with big backpping itself for a user to trouble a client side user's hand, in order to back up. Therefore, backing up tended to become whether to be a non-dense, and while an important file had not been backed up by it, there was a danger that unexpected failure etc. would occur in a client side.

[0009] It is made in order that this invention may solve the problem mentioned above, and in the computer system of client-server connection, the time and effort of the client side user concerning a backup activity is saved, and it aims at realizing certain and efficient backup.

[0010]

[Means for Solving the Problem] As a way stage for attaining the purpose mentioned above, the information processing system concerning this invention is equipped with the following configurations.

[0011] Namely, are the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment. A time recognition means to recognize time, and a data recognition means to recognize the predetermined data information held at said 2nd equipment, A transfer-request means to require the data transfer based on the predetermined data information recognized by said recognition means of said 2nd equipment when expiration of predetermined time has been recognized by said time recognition means, It is characterized by having a storing means to store in a predetermined location the data transmitted from said 2nd equipment, and having a transfer means to transmit the data based on said predetermined data information according to the transfer request from said 1st equipment, in said 2nd equipment.

[0012] Moreover, are the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment. A time recognition means to recognize time, and a transfer-request means to require a data transfer of said 2nd equipment when expiration of predetermined time has been recognized by said time recognition means, Have a storing means to store in a predetermined location the data transmitted from said 2nd equipment, and it sets to said 2nd equipment. It is characterized by having a data recognition means to recognize the predetermined data information which self holds, and a transfer means to transmit the data based on the predetermined data information recognized by said recognition means according to the transfer request from said 1st equipment.

[0013] Moreover, the information processing approach of this invention is equipped with the following processes as a way method for attaining the purpose mentioned above.

[0014] Namely, are the information processing approach in the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment side. The recognition process which recognizes the predetermined data information held at said 2nd equipment, The demand process which requires the data transfer based on said recognized predetermined data information of said 2nd equipment when expiration of predetermined time has been recognized, It is characterized by having the storing process which stores in a predetermined location the data transmitted from said 2nd equipment, and having the transfer process which transmits the data based on said predetermined data information according to the transfer request from said 1st equipment in said 2nd equipment side.

[0015] Moreover, are the information processing approach in the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment side. When expiration of predetermined time has been recognized, have the demand process which requires a data transfer of said 2nd equipment, and the storing process which stores in a predetermined location the data transmitted from said 2nd equipment, and it sets to said 2nd equipment side. It is characterized by having the recognition process which recognizes the predetermined data information which self holds, and the transfer process which transmits the data based on said recognized predetermined data information according to the transfer request from said 1st equipment.

[0016]

[Embodiment of the Invention] Hereafter, 1 operation gestalt concerning this invention is explained to a detail with reference to a drawing.

[0017] The example of a computer system of the client-server configuration which starts this operation

gestalt at <1st operation gestalt> drawing 1 is shown. In this drawing, 101 is a server machine, 102 is a client machine, and the system is equipped with three sets (102a-102c) of client machines in this drawing. Moreover, 103 (103a-103e) is a hard disk (HD), and 104 is a tape drive. 105 is a network and has connected between the server machine 101 and the client machine 102.

[0018] Signs that a server machine 101 and client machine 102a are connected to drawing 2 are shown. The server machine 101 is equipped with RAM203 used as the working area of ROM202 and CPU101 which hold CPU201 which controls the server machine 101 whole, a control program, etc. as the minimum configuration, and the timer 204 which performs time amount measurement. And it connects with HD103a and a tape drive 104 at the appearance mentioned above, and connects with client machine 102a through the network 105. Client machine 102a also holds CPU301, ROM302, and RAM303 as the minimum configuration, and is connected with HD103b.

[0019] In a server machine 101 and client machine 102a, the program 205,304 for backup later mentioned to RAM203,303 or the hard disks 103a and 103b which can be written in, and inside, respectively is held. Namely, flexible modification of the contents is possible for the program 205,304 for backup.

[0020] The user of client machines 102a-102c is accumulating the work content in HD 103b-103e connected to each. Activity data files which were got blocked, for example, were created with each client machines 102a-102c, such as a document and a spreadsheet, are saved at each HD 103b-103e.

[0021] The directory configuration of HD103b which it has as a result, for example, client machine 102a, presupposes that it has become like drawing 3 .

[0022] Since three users, "manaka", "nakamura", and "ohi", are using client machine 102a, under the "users" directory which is directly under the root directory of C drive, each three directories for users, "manaka", "nakamura", and "ohi", exist. Each user created the suitable directory tree for the bottom of each directory, and has stored the individual activity data file. In the case of the user "ohi", directories, such as "doc", "etc", and "source", were created, and it has stored the activity data file in the bottom of it.

[0023] The "users" directory is not what the user who uses client machine 102a created himself, and when it installs operation system (OS) in client machine 102a, it is created by OS here. Although each user's directory exists in the bottom of it, this is the home directory of each user who determined when each user was registered into client machine 102a.

[0024] Here, the reason each user's home directory exists is for changing a machine environment to the environment for the users, when a certain user logs on to the machine. That is, since a current directory changes to its home directory at the time of a log on, it becomes easy for a user to access his activity data file. Moreover, with others' home directory, since the directory tree branches, it is easy to attach distinction with others' activity data file and its data file, and security protection by others' taking care not to see their file etc. can also be performed easily.

[0025] Moreover, the reason for serving as each user's home directory by the "users" directory is because a data file's which it is as a result of [of each user / important] activity existence location can be grasped easily. This can also perform now easily processing of the activity data file deletion by the manager etc.

[0026] Moreover, although C drive in HD103b is shown in drawing 3 , it is meaningless to this C drive itself, the OS itself is only installed in the 1st drive (C drive) of client machine 102a here, and it is shown that the "users" directory is created by the same drive as that drive. Of course, when HD103b is divided into some partitions, you may make it create the "users" directory to another drive.

[0027] Next, the backup actuation in this operation gestalt based on the above configuration is explained with reference to drawing 4 .

[0028] Drawing 4 is a flow chart which shows the backup operations sequence on a server machine 101. The server machine 101 has memorized the backup program 205 in RAM203. The time which performs backup as a backup schedule, and the information which combined the contents of backup performed at the time are included in the backup program 205. In addition, the backup program 205 may be held anywhere, as long as HD103a etc. is the storage connected to the server machine 101.

[0029] First, in step S301, the above-mentioned backup program 205 exists, and a server machine 101 checks whether there is any schedule of whether to be effective and or not backup. Consequently, although processing will be ended as it is if there is no schedule of backup, when there is a backup schedule, it progresses to step S302, and supervises whether the backup time shown in the backup program 205 was reached with the timer 204. And in order to wait to become the above-mentioned backup time and to start activation of a backup program 205, it progresses to step S303.

[0030] In addition, it is assumed that the contents of backup in this example are held at the backup program 205 as "backing up all the contents below the "users" directory of all the client machines 102 to HD103a on a server machine 101."

[0031] If backup time is completed at step S302 as mentioned above, and activation of a backup program 205 is started, in step S303, a server machine 101 will perform first the demand "send out the file below the "users" directory" to the first client machine 102a. Then, in client machine 102a, the file below the demanded "users" directory is sent out to a server machine 101 one by one responding to this demand by performing a backup program 304. That is, in a backup program 304, the information for backup ("users" in this case below a directory) received from the server machine 101 is set up as a parameter. In addition, in client machine 102a, the backup program 304 is beforehand stored in RAM303 at the time of install of OS etc.

[0032] And in a server machine 101 side, the file sent from client machine 102a in step S304 is saved at reception, and this is saved at HD103a. Thereby, the backup about client machine 102a is completed.

[0033] And it progresses to step S305 and it is confirmed whether backup was completed to all client machines. At present, since deer termination has not been carried out only about client machine 102a yet, it returns to step S303 by making client machine 102b applicable to backup next.

[0034] Thus, all the backup processes in this operation gestalt are completed by performing the procedure of steps S303-S305 mentioned above to all the client machines 102 based on the backup program 205 by the side of a server machine 101.

[0035] The activity data on a client machine 102 can be automatically backed up on a server machine 101, without troubling the hand of the user of a client machine 102 with this operation gestalt as mentioned above.

[0036] In addition, with this operation gestalt, the directory set as the backup object of a client machine 102 was specified as the bottom of the "users" directory. This is because it can recognize that an activity data file is in a server machine 101 side under the "users" directory.

[0037] When installing OS in a client machine 102, it mentioned that the "users" directory was created above. The client machine 102 has told the server machine 101 about the "users" directory having been created beforehand, and can build the above backup programs 205 to a server machine 101 side by this. That is, the candidate for backup of arbitration can be specified by setting up the candidate for backup in the backup program 205 by the side of a server machine 101.

[0038] You may set up by reading the name for backup which could also write in directly in the backup program 205, or was memorized as a definition file etc. in RAM203 in the backup program 205 as the setting approach for [this] backup.

[0039] Therefore, any directory is sufficient as long as the directory used as the candidate for backup is a directory in which it does not restrict to "users", of course and the user activity data file was stored. And what is necessary is just to show this directory in a backup program 205.

[0040] As explained above, in a client machine 102, a user's time and effort is not taken by backing up automatically the bottom of the "users" directory on a client machine 102 based on the directions from a server machine 101 according to this operation gestalt, but backup without troublesomeness is attained.

[0041] The 2nd operation gestalt concerning this invention is explained below the <2nd operation gestalt>. In addition, since the system configuration in the 2nd operation gestalt and the directory configuration are the same as that of the 1st operation gestalt mentioned above, explanation is omitted.

[0042] In the 1st operation gestalt mentioned above, the server machine 101 has recognized the candidate for backup, and explained the example which specifies the directory in a backup program 205. That is, the candidate for backup was determined as the server machine 101 side.

[0043] In the 2nd operation gestalt, it is characterized by recognizing and determining the directory used as the candidate for backup as a client machine 102 side. That is, also in a client machine 102, since it can recognize, of course, that an activity data file exists under the "users" directory can set up a backup program 304 for the candidate for backup as the bottom of the "users" directory in a client machine 102.

[0044] Hereafter, the processing at the time of determining the candidate for backup as a client machine 102 side is explained.

[0045] In the 2nd operation gestalt, the purport "backs up all the contents of backup that the machine on [all] a client machine 102 sends out to HD103a on a server machine 101" up as contents of backup is set up in the backup program 205 by the side of a server machine 101.

[0046] In the flow chart of drawing 4 mentioned above, step S302 of the backup process in the server machine 101 in this case is the same.

[0047] And in step S303, a server machine 101 performs a backup demand to a client machine 102. Assignment of a concrete directory is not performed in that case. By performing a backup program 304 to a client machine 102 side in response to this demand, the contents below the "users" directory are chosen as an object which should back up, and it sends out to a server machine 101. And below, since it is the same as that of the above-mentioned procedure about steps S304 and S305, explanation is omitted.

[0048] As explained above, according to the 2nd operation gestalt, the candidate for backup can be automatically determined as a client machine 102 side, and it can back up automatically. Therefore, like the 1st operation gestalt mentioned above, the time and effort of the user of a client machine 102 is not taken, but backup without troublesomeness is attained.

[0049] In addition, the preservation location of the file backed up in the 1st and 2nd operation gestalt mentioned above may not be limited to HD103a of a server machine 101, and may be a tape drive 104. Moreover, it is also possible for it not to be necessary to necessarily save to the store connected to the server machine 101 for example, and for a server machine 101 to perform a backup demand, and to back up in HD103e connected to client machine 102c for [in each HD 103b-103d of client machines 102a-102c] backup.

[0050] As backup actuation in that case, in step S304 shown in drawing 4, a server machine 101 can send out the backup data from a client machine 102 to reception, sends it out to client machine 102c first, and the procedure ordered "To save this data" can be considered.

[0051] Or in case a server machine 101 requires backup from a client machine 102 in step S303, it is also possible to specify that the preservation place of backup is HD103e on client machine 102c. In this case, the client machine 102 which received the backup demand sends out backup data to direct client machine 102c, and client machine 102c saves that data at HD103e.

[0052] The 3rd operation gestalt concerning this invention is explained below the <3rd operation gestalt>. In addition, since the system configuration in the 3rd operation gestalt and the directory configuration are the same as that of the 1st operation gestalt mentioned above, explanation is omitted.

[0053] In the 1st operation gestalt and the 2nd operation gestalt which were mentioned above, since it becomes all the files in which the candidate for backup exists below in a predetermined directory, when the file which should back up under the directory, and a file without the need are intermingled, useless processing [say / backing up to a file without the need for backup] will arise.

[0054] Therefore, with the 3rd operation gestalt, it is characterized by backing up only a required file by directing clearly the directory and file used as the candidate for backup.

[0055] Hereafter, the designation approach for [in the 3rd operation gestalt] backup is explained. With the 3rd operation gestalt, a certain mark is added to the directory or file used as the candidate for backup. For example, suppose that the file for backup and the file which is not so are intermingled under a user "ohi" in the directory configuration shown in drawing 3. Then, in the 3rd operation gestalt, a user "ohi" adds a predetermined mark to the file for backup using suitable application.

[0056] The example is shown in drawing 5. In this drawing, the directory or file to which the asterisk (*) was added to the file name is a file specified as a candidate for backup. That is, the directory, the "doc" "etcfile1" file, and the "etcfile3" file and "source" directory serve as a candidate for backup. In

addition, when a directory is specified as a candidate for backup, all the files below the directory serve as a candidate for backup.

[0057] Thus, if a backup demand is received from a server machine 101 after the candidate for backup is specified, client machine 102a will search the directory or file to which the mark for backup was added. And if a mark is found, all files below the directory or backup of the file will be performed.

[0058] Various approaches can be considered as a specification method for [in the 3rd operation gestalt] backup. For example, the approach of updating whether using suitable application, one directory or a file is deleted from an addition or the candidate for backup for backup each time, namely, a mark is added to a suitable file name each time may be used. Moreover, the definition file which shows the directory and file name for backup as shown in drawing 6 may be held in the RAM303 grade of RAM203 of a server machine 101, or a client machine 102, and the approach of carrying out package edit of these data may be used. A client machine 102 or a server machine 101 just grasps the backup information data in which it is shown in short which file should be backed up.

[0059] As explained above, according to the 3rd operation gestalt, the flexible backup only for really required directory or file is attained at a client machine 102 side. And the capacity of the disk which saves backup data, or a tape can be effectively used by performing necessary minimum backup in this way.

[0060] Moreover, since this file can be removed for backup to avoid being backed up on security even if it is a file on a home directory, also in the field of security protection, it is [in / the user of a client machine 102] useful.

[0061] In addition, according to the 3rd operation gestalt, the activity of choosing the candidate for backup in the user of a client 102 will arise, but if backup is manually performed like before or being compared with creating a backup program, operability will improve considerably.

[0062] It cannot be overemphasized by operation gestalt > besides <, in addition the purpose of this invention supplying the storage which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and carrying out read-out activation of the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage that it is attained.

[0063] In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized that program code will constitute this invention.

[0064] As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, the memory card of a non-volatile, ROM, etc. can be used, for example.

[0065] Moreover, it cannot be overemphasized that it is contained also when the function of the operation gestalt which performed a part or all of processing that OS (operating system) which is working on a computer is actual, based on directions of the program code, and the function of the operation gestalt mentioned above by performing the program code which the computer read is not only realized, but was mentioned above by the processing is realized.

[0066] Furthermore, after the program code read from a storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or a computer is equipped, it cannot be overemphasized that it is contained also when the function of the operation gestalt which performed a part or all of processing that CPU with which the functional add-in board and functional expansion unit are equipped based on directions of the program code is actual, and mentioned above by the processing is realized.

[0067] Although the program code corresponding to the flow chart explained previously will be stored in the storage when applying this invention to the above-mentioned storage, when it explains briefly, each module shown in the example of a memory map of drawing 7 will be stored in a storage. Namely, what is necessary is just to store the program code of each module of a "backup activation judging module", a "backup check module", a "backup demand module", a "backup module", and a "backup termination judging module" in a storage at least.

[0068]

[Effect of the Invention] If a server machine gives a backup demand to a client machine based on the time schedule of a backup activity according to this invention as explained above By sending out the data for backup recognized as a candidate for backup from a client machine, and backup into a predetermined storage having been made to perform In case the activity data file of a client machine is backed up, the user of a client machine can save the time and effort engaged in direct backup, and can realize certainly efficient and effective backup.

[0069]

[Translation done.]

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TECHNICAL FIELD

[Field of the Invention] This invention relates to the information processing system which backs up the information memorized by the store of a client machine with a server machine, and its approach, concerning information processing system and its approach.

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PRIOR ART

[Description of the Prior Art] Conventionally, the computer system connected in the so-called network of the client-server configuration which connects at least one set (a client machine is called hereafter) of a client computer with at least one server computer (a server machine is called hereafter) exists.

[0003] In the computer system of such a client-server configuration, when the work content in a client machine etc. is accumulated in storage, such as a hard disk in a client machine, for example, according to a certain cause, failure of this storage occurs and backup is usually taken in preparation for the situation where reference of the work content becomes impossible.

[0004] Backup points out saving the copy of the work content stored in the store at the hard disk of a floppy disk, a tape, or a server machine etc. here. Usually, a backup activity is manually done by the user. That is, backup is performed by setting preservation media, such as a FUDOPPU disk used as a copy place, or a tape, to a drive, and copying the file which stored the work content in a hard disk. Or this file is backed up to the integral hard disk of a server machine. In addition, although the time and effort which sets a preservation medium can be saved when backing up to the hard disk of a server machine, the activity which specifies the directory which serves as a copy place of a file in a server machine, and actually copies a file is a user's handicraft too.

[0005] Of course, it is also possible to automate such a backup activity to some extent. For example, by having a scheduling program, it is possible to operate a predetermined backup program in predetermined time by this program. In the backup program, the copy actuation of a file used as the candidate for backup is specified. It can back up automatically by this at predetermined time of day, such as 0:00 a.m. on every week Saturday, and automation of a backup activity can be attained.

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EFFECT OF THE INVENTION

[Effect of the Invention] As explained above, when the server machine gave the backup demand to the client machine in this invention based on the time schedule of a backup activity, the data for backup recognized as a candidate for backup are sent out from a client machine, and backup into a predetermined storage was made to perform. Therefore, in case the activity data file of a client machine is backed up, the user of a client machine can save the time and effort engaged in direct backup, and can realize certainly efficient and effective backup.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, in the computer system of the above-mentioned conventional client-server configuration, in order to automate backup, each user has to create an original backup program. This is because the files which the work environments of a client machine differ for every user, therefore serve as a candidate for backup also differ, and is difficult to create the general-purpose backup program which becomes usable among different users. Therefore, in order to automate backup, the skill which creates a backup program is required of the user individual of a client machine. [0007] Moreover, the candidate for backup -- the number of files which should back up increases along with change of a work content -- changes every moment. Therefore, as for each backup program, a maintenance is always needed. This maintenance is very complicated, and when this maintenance occurs frequently, time and effort to the extent that it is not different from manual backup will produce it. [0008] Even if it makes it handicraft like the above and makes it automation by the backup program, since it is not avoided, it will become a burden with big backupper itself for a user to trouble a client side user's hand, in order to back up. Therefore, backing up tended to become whether to be a non-dense, and while an important file had not been backed up by it, there was a danger that unexpected failure etc. would occur in a client side. [0009] It is made in order that this invention may solve the problem mentioned above, and in the computer system of client-server connection, the time and effort of the client side user concerning a backup activity is saved, and it aims at realizing certain and efficient backup.

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MEANS

[Means for Solving the Problem] As a way stage for attaining the purpose mentioned above, the information processing system concerning this invention is equipped with the following configurations. [0011] Namely, are the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment. A time recognition means to recognize time, and a data recognition means to recognize the predetermined data information held at said 2nd equipment, A transfer-request means to require the data transfer based on the predetermined data information recognized by said recognition means of said 2nd equipment when expiration of predetermined time has been recognized by said time recognition means, It is characterized by having a storing means to store in a predetermined location the data transmitted from said 2nd equipment, and having a transfer means to transmit the data based on said predetermined data information according to the transfer request from said 1st equipment, in said 2nd equipment.

[0012] Moreover, are the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment. A time recognition means to recognize time, and a transfer-request means to require a data transfer of said 2nd equipment when expiration of predetermined time has been recognized by said time recognition means, Have a storing means to store in a predetermined location the data transmitted from said 2nd equipment, and it sets to said 2nd equipment. It is characterized by having a data recognition means to recognize the predetermined data information which self holds, and a transfer means to transmit the data based on the predetermined data information recognized by said recognition means according to the transfer request from said 1st equipment.

[0013] Moreover, the information processing approach of this invention is equipped with the following processes as a way method for attaining the purpose mentioned above.

[0014] Namely, are the information processing approach in the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment side. The recognition process which recognizes the predetermined data information held at said 2nd equipment, The demand process which requires the data transfer based on said recognized predetermined data information of said 2nd equipment when expiration of predetermined time has been recognized, It is characterized by having the storing process which stores in a predetermined location the data transmitted from said 2nd equipment, and having the transfer process which transmits the data based on said predetermined data information according to the transfer request from said 1st equipment in said 2nd equipment side.

[0015] Moreover, are the information processing approach in the information processing system to which the 1st equipment and 2nd equipment were connected, and it sets to said 1st equipment side. When expiration of predetermined time has been recognized, have the demand process which requires a data transfer of said 2nd equipment, and the storing process which stores in a predetermined location the data transmitted from said 2nd equipment, and it sets to said 2nd equipment side. It is characterized by having the recognition process which recognizes the predetermined data information which self holds, and the transfer process which transmits the data based on said recognized predetermined data

information according to the transfer request from said 1st equipment.

[0016]

[Embodiment of the Invention] Hereafter, 1 operation gestalt concerning this invention is explained to a detail with reference to a drawing.

[0017] The example of a computer system of the client-server configuration which starts this operation gestalt at <1st operation gestalt> drawing 1 is shown. In this drawing, 101 is a server machine, 102 is a client machine, and the system is equipped with three sets (102a-102c) of client machines in this drawing. Moreover, 103 (103a-103e) is a hard disk (HD), and 104 is a tape drive. 105 is a network and has connected between the server machine 101 and the client machine 102.

[0018] Signs that a server machine 101 and client machine 102a are connected to drawing 2 are shown. The server machine 101 is equipped with RAM203 used as the working area of ROM202 and CPU101 which hold CPU201 which controls the server machine 101 whole, a control program, etc. as the minimum configuration, and the timer 204 which performs time amount measurement. And it connects with HD103a and a tape drive 104 at the appearance mentioned above, and connects with client machine 102a through the network 105. Client machine 102a also holds CPU301, ROM302, and RAM303 as the minimum configuration, and is connected with HD103b.

[0019] In a server machine 101 and client machine 102a, the program 205,304 for backup later mentioned to RAM203,303 or the hard disks 103a and 103b which can be written in, and inside, respectively is held. Namely, flexible modification of the contents is possible for the program 205,304 for backup.

[0020] The user of client machines 102a-102c is accumulating the work content in HD 103b-103e connected to each. Activity data files which were got blocked, for example, were created with each client machines 102a-102c, such as a document and a spreadsheet, are saved at each HD 103b-103e.

[0021] The directory configuration of HD103b which it has as a result, for example, client machine 102a, presupposes that it has become like drawing 3 .

[0022] Since three users, "manaka", "nakamura", and "ohi", are using client machine 102a, under the "users" directory which is directly under the root directory of C drive, each three directories for users, "manaka", "nakamura", and "ohi", exist. Each user created the suitable directory tree for the bottom of each directory, and has stored the individual activity data file. In the case of the user "ohi", directories, such as "doc", "etc", and "source", were created, and it has stored the activity data file in the bottom of it.

[0023] The "users" directory is not what the user who uses client machine 102a created himself, and when it installs operation system (OS) in client machine 102a, it is created by OS here. Although each user's directory exists in the bottom of it, this is the home directory of each user who determined when each user was registered into client machine 102a.

[0024] Here, the reason each user's home directory exists is for changing a machine environment to the environment for the users, when a certain user logs on to the machine. That is, since a current directory changes to its home directory at the time of a log on, it becomes easy for a user to access his activity data file. Moreover, with others' home directory, since the directory tree branches, it is easy to attach distinction with others' activity data file and its data file, and security protection by others' taking care not to see their file etc. can also be performed easily.

[0025] Moreover, the reason for serving as each user's home directory by the "users" directory is because a data file's which it is as a result of [of each user / important] activity existence location can be grasped easily. This can also perform now easily processing of the activity data file deletion by the manager etc.

[0026] Moreover, although C drive in HD103b is shown in drawing 3 , it is meaningless to this C drive itself, the OS itself is only installed in the 1st drive (C drive) of client machine 102a here, and it is shown that the "users" directory is created by the same drive as that drive. Of course, when HD103b is divided into some partitions, you may make it create the "users" directory to another drive.

[0027] Next, the backup actuation in this operation gestalt based on the above configuration is explained with reference to drawing 4 .

[0028] Drawing 4 is a flow chart which shows the backup operations sequence on a server machine 101. The server machine 101 has memorized the backup program 205 in RAM203. The time which performs backup as a backup schedule, and the information which combined the contents of backup performed at the time are included in the backup program 205. In addition, the backup program 205 may be held anywhere, as long as HD103a etc. is the storage connected to the server machine 101.

[0029] First, in step S301, the above-mentioned backup program 205 exists, and a server machine 101 checks whether there is any schedule of whether to be effective and or not backup. Consequently, although processing will be ended as it is if there is no schedule of backup, when there is a backup schedule, it progresses to step S302, and supervises whether the backup time shown in the backup program 205 was reached with the timer 204. And in order to wait to become the above-mentioned backup time and to start activation of a backup program 205, it progresses to step S303.

[0030] In addition, it is assumed that the contents of backup in this example are held at the backup program 205 as "backing up all the contents below the "users" directory of all the client machines 102 to HD103a on a server machine 101."

[0031] If backup time is completed at step S302 as mentioned above, and activation of a backup program 205 is started, in step S303, a server machine 101 will perform first the demand "send out the file below the "users" directory" to the first client machine 102a. Then, in client machine 102a, the file below the demanded "users" directory is sent out to a server machine 101 one by one responding to this demand by performing a backup program 304. That is, in a backup program 304, the information for backup ("users" in this case below a directory) received from the server machine 101 is set up as a parameter. In addition, in client machine 102a, the backup program 304 is beforehand stored in RAM303 at the time of install of OS etc.

[0032] And in a server machine 101 side, the file sent from client machine 102a in step S304 is saved at reception, and this is saved at HD103a. Thereby, the backup about client machine 102a is completed.

[0033] And it progresses to step S305 and it is confirmed whether backup was completed to all client machines. At present, since deer termination has not been carried out only about client machine 102a yet, it returns to step S303 by making client machine 102b applicable to backup next.

[0034] Thus, all the backup processes in this operation gestalt are completed by performing the procedure of steps S303-S305 mentioned above to all the client machines 102 based on the backup program 205 by the side of a server machine 101.

[0035] The activity data on a client machine 102 can be automatically backed up on a server machine 101, without troubling the hand of the user of a client machine 102 with this operation gestalt as mentioned above.

[0036] In addition, with this operation gestalt, the directory set as the backup object of a client machine 102 was specified as the bottom of the "users" directory. This is because it can recognize that an activity data file is in a server machine 101 side under the "users" directory.

[0037] When installing OS in a client machine 102, it mentioned that the "users" directory was created above. The client machine 102 has told the server machine 101 about the "users" directory having been created beforehand, and can build the above backup programs 205 to a server machine 101 side by this. That is, the candidate for backup of arbitration can be specified by setting up the candidate for backup in the backup program 205 by the side of a server machine 101.

[0038] You may set up by reading the name for backup which could also write in directly in the backup program 205, or was memorized as a definition file etc. in RAM203 in the backup program 205 as the setting approach for [this] backup.

[0039] Therefore, any directory is sufficient as long as the directory used as the candidate for backup is a directory in which it does not restrict to "users", of course and the user activity data file was stored. And what is necessary is just to show this directory in a backup program 205.

[0040] As explained above, in a client machine 102, a user's time and effort is not taken by backing up automatically the bottom of the "users" directory on a client machine 102 based on the directions from a server machine 101 according to this operation gestalt, but backup without troublesomeness is attained.

[0041] The 2nd operation gestalt concerning this invention is explained below the <2nd operation

gestalt>. In addition, since the system configuration in the 2nd operation gestalt and the directory configuration are the same as that of the 1st operation gestalt mentioned above, explanation is omitted.

[0042] In the 1st operation gestalt mentioned above, the server machine 101 has recognized the candidate for backup, and explained the example which specifies the directory in a backup program 205. That is, the candidate for backup was determined as the server machine 101 side.

[0043] In the 2nd operation gestalt, it is characterized by recognizing and determining the directory used as the candidate for backup as a client machine 102 side. That is, also in a client machine 102, since it can recognize, of course, that an activity data file exists under the "users" directory can set up a backup program 304 for the candidate for backup as the bottom of the "users" directory in a client machine 102.

[0044] Hereafter, the processing at the time of determining the candidate for backup as a client machine 102 side is explained.

[0045] In the 2nd operation gestalt, the purport "backs up all the contents of backup that the machine on [all] a client machine 102 sends out to HD103a on a server machine 101" up as contents of backup is set up in the backup program 205 by the side of a server machine 101.

[0046] In the flow chart of drawing 4 mentioned above, step S302 of the backup process in the server machine 101 in this case is the same.

[0047] And in step S303, a server machine 101 performs a backup demand to a client machine 102. Assignment of a concrete directory is not performed in that case. By performing a backup program 304 to a client machine 102 side in response to this demand, the contents below the "users" directory are chosen as an object which should back up, and it sends out to a server machine 101. And below, since it is the same as that of the above-mentioned procedure about steps S304 and S305, explanation is omitted.

[0048] As explained above, according to the 2nd operation gestalt, the candidate for backup can be automatically determined as a client machine 102 side, and it can back up automatically. Therefore, like the 1st operation gestalt mentioned above, the time and effort of the user of a client machine 102 is not taken, but backup without troublesomeness is attained.

[0049] In addition, the preservation location of the file backed up in the 1st and 2nd operation gestalt mentioned above may not be limited to HD103a of a server machine 101, and may be a tape drive 104. Moreover, it is also possible for it not to be necessary to necessarily save to the store connected to the server machine 101 for example, and for a server machine 101 to perform a backup demand, and to back up in HD103e connected to client machine 102c for [in each HD 103b-103d of client machines 102a-102c] backup.

[0050] As backup actuation in that case, in step S304 shown in drawing 4 , a server machine 101 can send out the backup data from a client machine 102 to reception, sends it out to client machine 102c first, and the procedure ordered "To save this data" can be considered.

[0051] Or in case a server machine 101 requires backup from a client machine 102 in step S303, it is also possible to specify that the preservation place of backup is HD103e on client machine 102c. In this case, the client machine 102 which received the backup demand sends out backup data to direct client machine 102c, and client machine 102c saves that data at HD103e.

[0052] The 3rd operation gestalt concerning this invention is explained below the <3rd operation gestalt>. In addition, since the system configuration in the 3rd operation gestalt and the directory configuration are the same as that of the 1st operation gestalt mentioned above, explanation is omitted.

[0053] In the 1st operation gestalt and the 2nd operation gestalt which were mentioned above, since it becomes all the files in which the candidate for backup exists below in a predetermined directory, when the file which should back up under the directory, and a file without the need are intermingled, useless processing [say / backing up to a file without the need for backup] will arise.

[0054] Therefore, with the 3rd operation gestalt, it is characterized by backing up only a required file by directing clearly the directory and file used as the candidate for backup.

[0055] Hereafter, the designation approach for [in the 3rd operation gestalt] backup is explained. With the 3rd operation gestalt, a certain mark is added to the directory or file used as the candidate for backup. For example, suppose that the file for backup and the file which is not so are intermingled under

a user "ohi" in the directory configuration shown in drawing 3 . Then, in the 3rd operation gestalt, a user "ohi" adds a predetermined mark to the file for backup using suitable application.

[0056] The example is shown in drawing 5 . In this drawing, the directory or file to which the asterisk (*) was added to the file name is a file specified as a candidate for backup. That is, the directory, the "doc" "etcfile1" file, and the "etcfile3" file and "source" directory serve as a candidate for backup. In addition, when a directory is specified as a candidate for backup, all the files below the directory serve as a candidate for backup.

[0057] Thus, if a backup demand is received from a server machine 101 after the candidate for backup is specified, client machine 102a will search the directory or file to which the mark for backup was added. And if a mark is found, all files below the directory or backup of the file will be performed.

[0058] Various approaches can be considered as a specification method for [in the 3rd operation gestalt] backup. For example, the approach of updating whether using suitable application, one directory or a file is deleted from an addition or the candidate for backup for backup each time, namely, a mark is added to a suitable file name each time may be used. Moreover, the definition file which shows the directory and file name for backup as shown in drawing 6 may be held in the RAM303 grade of RAM203 of a server machine 101, or a client machine 102, and the approach of carrying out package edit of these data may be used. A client machine 102 or a server machine 101 just grasps the backup information data in which it is shown in short which file should be backed up.

[0059] As explained above, according to the 3rd operation gestalt, the flexible backup only for really required directory or file is attained at a client machine 102 side. And the capacity of the disk which saves backup data, or a tape can be effectively used by performing necessary minimum backup in this way.

[0060] Moreover, since this file can be removed for backup to avoid being backed up on security even if it is a file on a home directory, also in the field of security protection, it is [in / the user of a client machine 102] useful.

[0061] In addition, according to the 3rd operation gestalt, the activity of choosing the candidate for backup in the user of a client 102 will arise, but if backup is manually performed like before or being compared with creating a backup program, operability will improve considerably.

[0062] It cannot be overemphasized by operation gestalt > besides <, in addition the purpose of this invention supplying the storage which recorded the program code of the software which realizes the function of the operation gestalt mentioned above to a system or equipment, and carrying out read-out activation of the program code with which the computer (or CPU and MPU) of the system or equipment was stored in the storage that it is attained.

[0063] In this case, the function of the operation gestalt which the program code itself read from the storage mentioned above will be realized, and the storage which memorized that program code will constitute this invention.

[0064] As a storage for supplying a program code, a floppy disk, a hard disk, an optical disk, a magneto-optic disk, CD-ROM, CD-R, a magnetic tape, the memory card of a non-volatile, ROM, etc. can be used, for example.

[0065] Moreover, it cannot be overemphasized that it is contained also when the function of the operation gestalt which performed a part or all of processing that OS (operating system) which is working on a computer is actual, based on directions of the program code, and the function of the operation gestalt mentioned above by performing the program code which the computer read is not only realized, but was mentioned above by the processing is realized.

[0066] Furthermore, after the program code read from a storage is written in the memory with which the functional expansion unit connected to the functional add-in board inserted in the computer or a computer is equipped, it cannot be overemphasized that it is contained also when the function of the operation gestalt which performed a part or all of processing that CPU with which the functional add-in board and functional expansion unit are equipped based on directions of the program code is actual, and mentioned above by the processing is realized.

[0067] Although the program code corresponding to the flow chart explained previously will be stored

in the storage when applying this invention to the above-mentioned storage, when it explains briefly, each module shown in the example of a memory map of drawing 7 will be stored in a storage. Namely, what is necessary is just to store the program code of each module of a "backup activation judging module", a "backup check module", a "backup demand module", a "backup module", and a "backup termination judging module" in a storage at least.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is drawing showing the network configuration of the computer system of the client-server configuration in 1 operation gestalt concerning this invention.

[Drawing 2] It is drawing showing the situation of connection between a server machine 101 and client machine 102a.

[Drawing 3] It is drawing showing the directory configuration in HD103b connected to client machine 102a.

[Drawing 4] It is the flow chart which shows the backup operations sequence in a server machine 101.

[Drawing 5] In the 3rd operation gestalt concerning this invention, it is drawing showing the directory configuration of HD103b which specified the candidate for backup.

[Drawing 6] It is drawing showing the example of a configuration of the definition file which holds the file name for backup in the 3rd operation gestalt.

[Drawing 7] It is the memory map in which the module of the program code which realizes this invention is shown.

[Description of Notations]

101 Server Machine

102 Client Machine

103 Hard Disk

104 Tape Drive

105 Network

201,301 CPU

202,302 ROM

203,303 RAM

204 Timer

205,304 Backup program

[Translation done.]

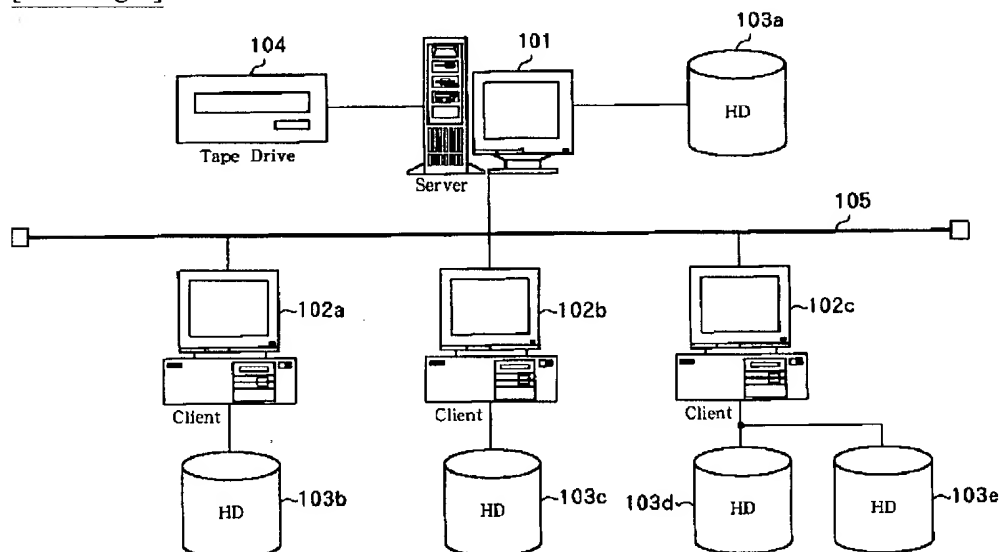
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DRAWINGS

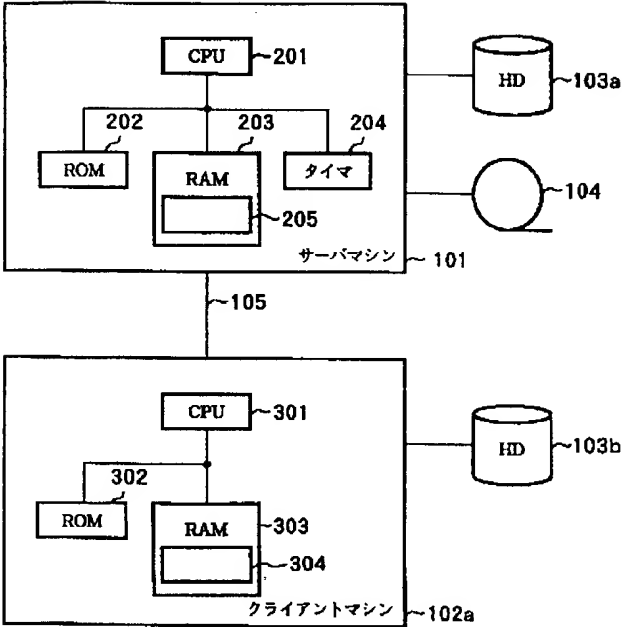
[Drawing 1]



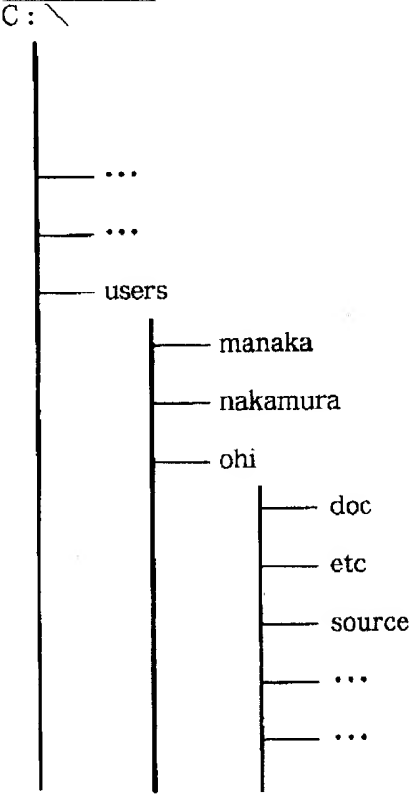
[Drawing 6]

| |
|-----------------------------|
| C : \users\ohi\doc |
| C : \users\ohi\etc\etcfile1 |
| C : \users\ohi\etc\etcfile3 |
| C : \users\ohi\source |

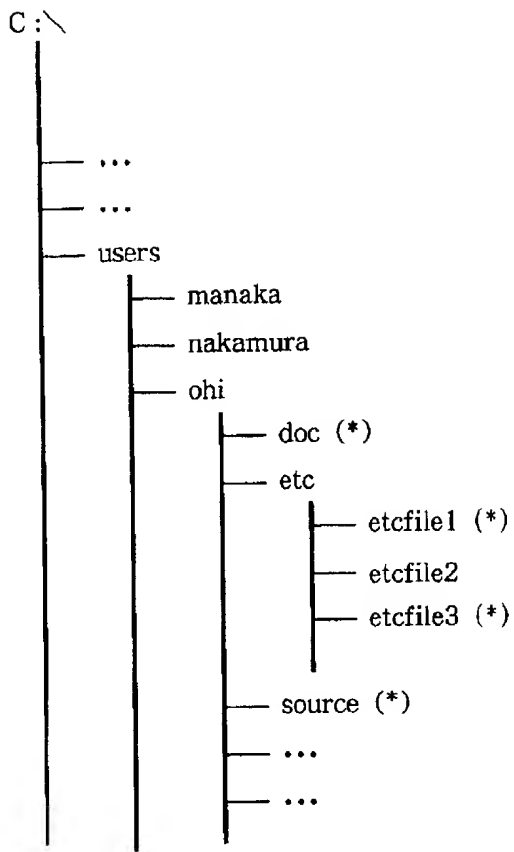
[Drawing 2]



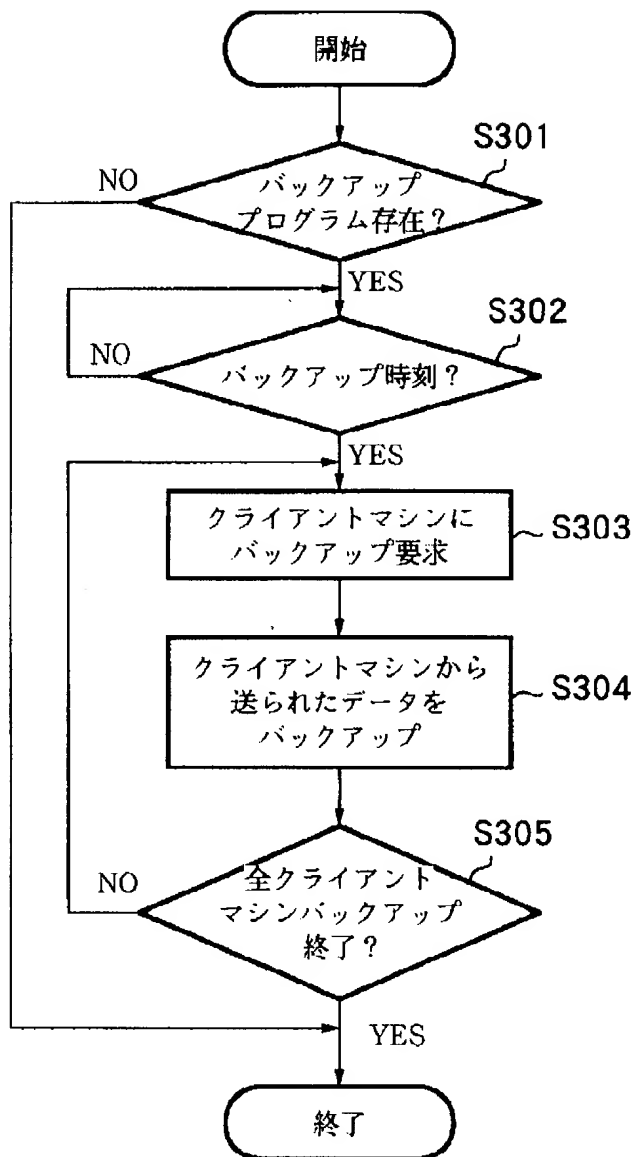
[Drawing 3]



[Drawing 5]



[Drawing 4]



[Drawing 7]

| |
|---------------------|
| ディレクトリ |
| ⋮ |
| バックアップ実行 判定モジュール |
| バックアップ時刻 確認モジュール |
| バックアップ要求 モジュール |
| バックアップ モジュール |
| バックアップ終了 判定モジュール |
| ⋮ |

[Translation done.]